



US005532227A

**United States Patent** [19][11] **Patent Number:** **5,532,227****Golub et al.**[45] **Date of Patent:** **Jul. 2, 1996**

[54] **TETRACYCLINES INCLUDING  
NON-ANTIMICROBIAL  
CHEMICALLY-MODIFIED TETRACYCLINES  
INHIBIT EXCESSIVE GLYCOSYLATION OF  
DIFFERENT TYPES OF COLLAGEN AND  
OTHER PROTEINS DURING DIABETES**

[75] **Inventors:** **Lorne M. Golub; Nungavarum S.  
Ramamurthy**, both of Smithtown;  
**Thomas F. McNamara**, Port Jefferson;  
**Maria E. Ryan**, Port Jefferson Station,  
all of N.Y.

[73] **Assignee:** **The Research Foundation of State  
University of New York, Albany, N.Y.**

[21] **Appl. No.:** **361,116**

[22] **Filed:** **Dec. 21, 1994**

**Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 977,549, Nov. 17, 1992,  
abandoned.

[51] **Int. Cl.<sup>6</sup>** ..... **A61K 31/65**  
[52] **U.S. Cl.** ..... **514/152; 514/866; 514/912**  
[58] **Field of Search** ..... **514/152, 866,  
514/912**

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

4,935,412	6/1990	McNamara et al.	514/152
5,045,538	9/1991	Schneider et al.	514/152
5,258,371	11/1993	Golub et al.	514/152

*Primary Examiner*—John W. Rollins

*Attorney, Agent, or Firm*—Hoffmann & Baron

[57] **ABSTRACT**

A method for treating mammals suffering from excessive extracellular protein glycosylation which is associated with diabetes, scleroderma and progeria by administering to the mammal a tetracycline which effectively inhibits excessive protein glycosylation.

**11 Claims, 9 Drawing Sheets**